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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,893	07/07/2004	Hisaji Oyake	120322	8778

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

VERDERAME, ANNA L

ART UNIT	PAPER NUMBER
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1756

MAIL DATE	DELIVERY MODE
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05/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,893

Applicant(s)

OYAKE ET AL.

Examiner

Anna L. Verderame

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 08/05/2004, 07/07/2004.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyake 2002/0160312.

Example one teaches a process for manufacturing a stamper for an optical disc comprising the steps of coating a light-absorbing layer containing 4,4'-bis(dimethylamino) benzophenone to a thickness of 52 nm, coating a photoresist layer on the light-absorbing layer to a thickness of 24 nm, exposing the resist to form a pattern, developing the pattern, forming a thin nickel film on the patterned resist, and electroplating a thicker nickel film onto the thin nickel, and finally peeling the nickel laminate from the photoresist to obtain an optical disc stamper (0052-0055). Thicknesses for the light-absorbing layer of 1 nm to 300 nm and more preferably 10 nm to 200 nm are disclosed at (0036).

It would have been obvious to one of ordinary skill in the art to modify the mastering process of example one by forming the light-absorbing layer to have a thickness of between 180 nm and 300 nm based on the disclosure to do so at (0036) and with the reasonable expectation of forming a useful optical disc stamper.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfeld 2002/0105103 in view of Sato et al 5,939, 510.

Kerfeld teaches a method for manufacturing a stamper for an optical recording medium comprising the steps of forming a photoresist layer having a thickness of 20-200 nm on a substrate (0030), exposing the resist (0031), developing the patterned resist using an aqueous sodium hydroxide solution (0032), coating the master with a thin nickel layer, electroplating a thick nickel layer on top of the thin nickel layer using a nickel sulfamate bath, and finally removing the nickel laminate from the photoresist master (0045).

In example 1, Sato et al. teaches the use of an undercoating solution containing 4,4'-bis(diethylamino) benzophenone and 2,2',4,4'-tetrahydroxyl benzophenone in propyleneglycol monomethyl ether acetate. The undercoating solution is coated onto a silicon substrate and then dried for 90 seconds at 90°C and then subjected to a heat treatment at 180°C for 5 minutes. The thickness of the undercoating layer is 100 nm. The undercoating layer is covered with a photoresist layer. The photoresist layer is 1000 nm thick. The photoresist layer is then patterned(11/34-65). 4,4'bis-(diethylamino) benzophenone exhibits an excellent anti-reflective effect (4/46-48). The benefits of using an anti-reflective (light-absorbing) undercoating were evaluated based on the effect these coatings had on the selectivity ratio, intermixing of layers, notching, and anti-reflective effect. These terms are defined at (11/1-31). Results are shown in

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table one(13/40-50). The comparative example did not have an anti-reflective undercoating. The use of the undercoating layer decreased the adverse influences caused by reflection of light, and decreased intermixing between layers and notching and increased the selectivity in the etching rates between the patterned resist layer and the undercoating layer(abstract). In regard to the thickness of the light-absorbing layer, a range $0.05\mu\text{m}$ to $0.3\mu\text{m}$ (50nm to 300 nm) is disclosed at (10/23).

Sato et al. does not teach the use of the patterned resist to form a stamper for an optical disc.

It would have been obvious to one of ordinary skill in the art to modify the mastering process of Kerfeld et al. by forming an anti-reflective (light-absorbing) undercoating between the substrate and the photoresist layer based on the example of Sato et al. and with the reasonable expectation of forming a useful master disk having the benefits disclosed in Sato et al. in the abstract and at (13/40-50). Further, it would have been obvious to form a light-absorbing layer having a thickness between 180 to 300 nm based on the disclosure to do so found in Sato et al. at (10/23).

4. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kerfeld 2002/0105103 in view of Sato et al 5,939, 510 as applied to claims 1-6 above, further in view of Takei JP-02277791 and Takahata et al. 2001/0044078.

The combination of Kerfeld 2002/0105103 in view of Sato et al 5,939, 510 does not teach the mastering process as recited in claims 7-9.

Takahata et al. discloses the use of a stamper master to stamp directly(claim 7) or alternatively the formation of a mother stamper (claim 8) from the master stamper by forming a nickel film laminate on the master stamper. Formation of a child stamper(claim 9) from the mother stamper is also disclosed. The master stamper, the mother stamper, or the child stamper may be used to stamp the optical disk substrate (0006). A mastering process is taught at (0037-0043).

Takei et al. illustrates a mastering process in which a master stamper 1 is used to form a mother stamper 5' and subsequently the mother stamper is used to form a child stamper 8'(abstract and illustration).

It would have been obvious to modify the combination of Kerfeld 2002/0105103 in view of Sato et al 5,939, 510 by stamping the optical disc substrate directly using the master stamper or alternatively to form a mother stamper from the master stamper or to form a child stamper from the mother stamper, and to stamp the optical disc substrate using either the mother or child stamper, based on the example of Takei et al. and Takahata et al. with the reasonable expectation of forming a useful patterned optical disc substrate.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-JP-09109276 Kamiyama et al teaches a method for manufacturing a stamper for an optical disc comprising the steps of forming a photoresist layer on a glass substrate, patterning the resist by exposing it to light and developing said pattern, coating the

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patterned resist with a tin-palladium system processing agent, removing the tin component, electrolessly plating nickel on the thus formed Pd layer, and finally peeling the palladium layer and the nickel layer from the photoresist to obtain an optical disc stamper (0060-0064). Tin-palladium colloidal system is taught at (0034). Use of accelerator is taught at (0040). A plating solution containing NiCl_2 is taught at which to form the plated nickel layer. The negatively charged colloidal system is adsorbed onto the surface of the resist. The tin component is removed. The Pd layer allows for the formation of a more even nickel layer than would be formed on the photoresist alone (0005-0006).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna L. Verderame whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

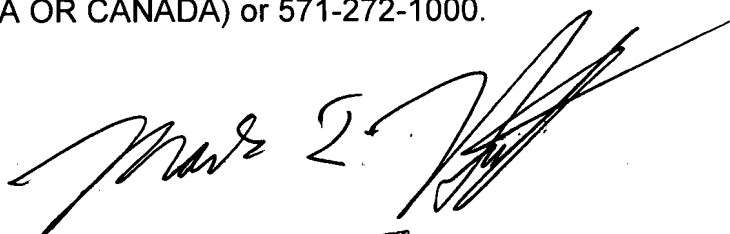
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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